

Distribution map is not currently available

MERISTIC CHARACTERS

BONY PARTS (min-mode-max)

Vertebrae

Total: 40 - 41 - 44

P precaudal: X - X - X

Caudal: X - X - X

Gill Rakers & Branchiostegal Rays

Upper gill rakers: X - X - X

Lower gill rakers: X - X - X

Branchiostegal rays: 2 - 2 - 2

FIN COUNTS (min-mode-max)

Fin (Position)	Spine(s)	Ray(s)
Pelvic (abdominal)	0 - 0 - 0	8 - 11 - 11
Dorsal	0 - 0 - 0	10 - 11 - 11
Pectoral	N/A	11 - 13 - 13
Anal	0 - 0 - 0	8 - 10 - 10

Caudal Fin Counts

Caudal upper secondary: 10 - X - 11

Caudal upper principal: 10 - 10 - 10

Caudal lower principal: 9 - 9 - 9

Caudal lower secondary: 11 - X - 12

LIFE HISTORY FEATURES

GENERAL

Range:	Oregon, 42-46 °N - South of southern California
Ecology:	Epi- and mesopelagic, 152-457 m; apparently worldwide in temperate and tropical waters
ELH Pattern:	Oviparous, eggs probably pelagic; larvae planktonic; paedomorphic
Longevity:	5 yr ¹

SPAWNING

Area:	
Season:	
Mode:	
Fecundity:	
Age at first maturity:	
Migration:	

EARLY LIFE HISTORY DESCRIPTION

EGGS

Diameter (mm):

No. of oil globules:

Oil globule diameter:

Yolk:

Chorion:

Egg/Embryo pigment:

Pigment diagnostics:

Diagnostics:

LARVAE

Hatch size(mm SL):

Preanal length(%SL): 70-79

Flexion length (mm SL): ~13 mm

Length at transformation (mm SL): ~30 mm

Fin ray development sequence: Principal caudal, pectoral, and pelvic; dorsal , anal and procurrent caudal

Larval Pigment Patterns

In each developmental larval stage, pigment is present in the regions listed below. For pigment regions see Figure 6.

Yolk-sac:

Preflexion:

Flexion: mouth, cheek, dorsal gut, ventral

Postflexion: mouth, crown, cheek, isthmus, dorsal gut, lateral gut, caudal finfold, pectoral fin, dorsal, caudal

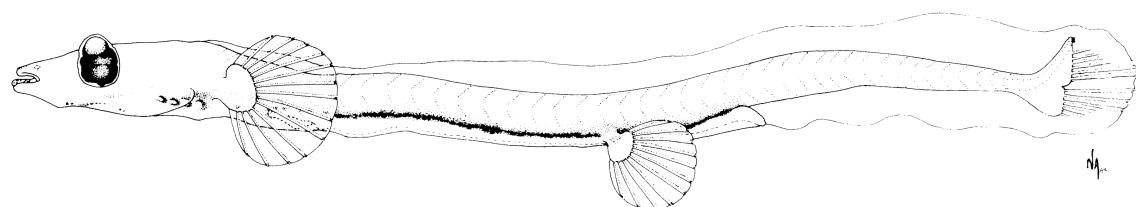
Juvenile: mouth, crown, cheek, isthmus, dorsal gut, lateral gut, ventral gut, caudal finfold, pectoral fin, dorsal, caudal

Pigment Diagnostics: Pigment on vomer and gill arches; for genus: lateral series of melanophores above gut; some species develop serial melanophores on hypaxial myomeres; head pigment (jaws, internal snout, gill arches)

Diagnostics

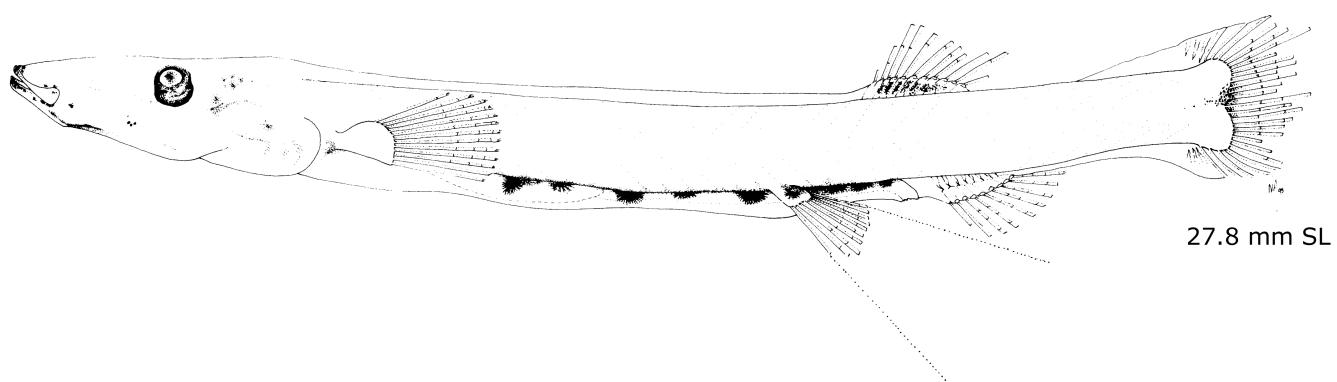
Dorsally directed tubular eyes; elongate gut (sac-like stomach and pointed at tip); early forming pectoral and pelvic fins with pedunculate bases; larvoid juveniles and adults enclosed in gelatinous sheath; stomach forms early on left side; dorsal longitudinal septum open; distinguished from *Bathylychnops exilis* and *Macropinna microstoma* by: number of myomeres (40-44 vs. 81-84 in *B. exilis* and 34-37 in *M. microstoma*)

A



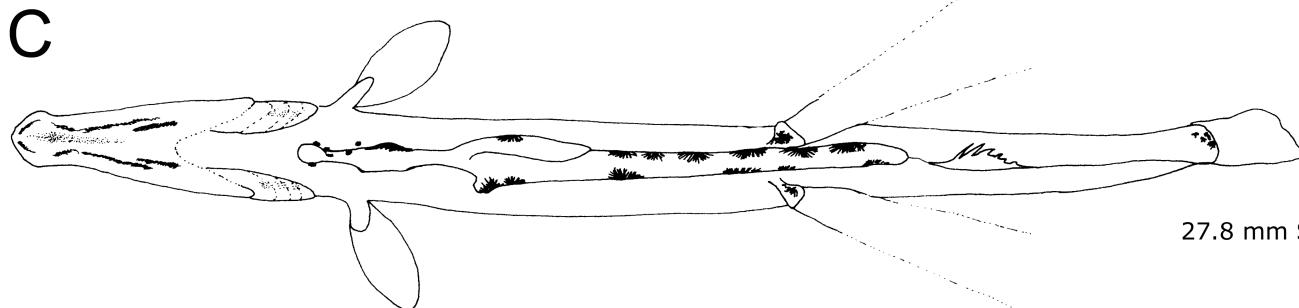
13.4 mm SL

B



27.8 mm SL

C



27.8 mm SL

GENERAL REFERENCES**Ref 1: Ahlstrom, E.H., H.G. Moser, and D.M. Cohen.**

Argentinoidei: Development and relationships. In H.G. Moser, W.J. Richards, D.M. Cohen, M.P. Fahay, A.W. Kendall, Jr., and S.L. Richardson (eds.), Ontogeny and systematics of fishes, Spec. Publ. 1, Am. Soc. Ichthyol. Herpetol., p. 155-168. Allen Press, Lawrence, KS, 760 p.

Ref 2: Matarese, A.C., A.W. Kendall, Jr., D.M. Blood, and B.M. Vinter. 1989.

Laboratory guide to early life history stages of Northeast Pacific fishes. NOAA Tech. Rep. NMFS 80, 652 p.

Ref 3: Moser, H.G. 1996.

Opisthoproctidae: Spookfishes. In H.G. Moser (ed.), The early stages of fishes in the California Current region, p. 216-223. CalCOFI Atlas 33. Allen Press, Lawrence, KS, 1505 p.

FOOTNOTES¹ **Fitch, J.E., and R.J. Lavenberg 1968.**

Deep-water fishes of California. Univ. Calif. Press, Berkeley, 155 p.

FIGURES**A - C: Moser, H.G. 1996.**

Opisthoproctidae: Spookfishes. In H.G. Moser (ed.), The early stages of fishes in the California Current region, p. 216-223. CalCOFI Atlas 33. Allen Press, Lawrence, KS, 1505 p.